

**Amendments to the Claims:**

This listing of claims will replace all prior versions and listings of claims in the application.

**Listing of Claims:**

Claim 1 (currently amended): A pump assembly for circulating a supercritical fluid, comprising:  
an impeller for pumping fluid between a pump inlet and a pump outlet; a rotating pump  
shaft coupled to the impeller, wherein the pump shaft is supported by non-lubricated  
corrosion resistant bearings; a rotor of a DC motor potted in epoxy and encased in a non-  
magnetic material sleeve; [[and]] a stator sealed from the fluid via a polymer[.]; wherein  
a portion of the supercritical fluid is diverted through the non-lubricated corrosion  
resistant bearings.

Claim 2 (cancelled): The pump assembly of claim 1, wherein the bearings are non-lubricated.

10

Claim 3 (original): The pump assembly of claim 1, further including an electrical controller  
suitable for operating the pump assembly, wherein the electrical controller comprises a  
commutation controller for sequentially energizing windings of the stator.

15

Claim 4 (original): The pump assembly of claim 1, wherein the pump is of centrifugal type.

Claim 5 (currently amended): The pump assembly of claim 1, wherein the bearings are made of  
silicon nitride balls with bearing races made of Cronidur® 30.

20

Claim 6 (currently amended): The pump assembly of claim 1, wherein the bearings are selected  
from the group consisting of one of following: ceramic bearings, hybrid bearings, full  
complement bearings, foil journal bearings, and[[or]] magnetic bearings.

25

Claim 7 (currently amended): The pump assembly of claim 1, wherein the polymer sleeve is a  
[[PEEK™]] Polyetheretherketone sleeve.

Claim 8 (original): The pump assembly of claim 1, wherein the non-magnetic material is stainless steel.

5           Claim 9 (original): The pump assembly of claim 1, wherein the impeller has a diameter between 1 inch and 2 inches.

Claim 10 (original): The pump assembly of claim 1, wherein the rotor has a diameter between 1.5 inches and 2 inches.

10          Claim 11 (original): The pump assembly of claim 1, wherein the rotor has a maximum speed of 60,000 rpm.

Claim 12 (original): The pump assembly of claim 1, wherein an operating pressure of the pump assembly is in the range 1,500-3,000 psi.

15          Claim 13 (original): The pump assembly of claim 1, wherein the supercritical fluid operates in the range 40-100 degrees Celsius.

20          Claim 14 (original): The pump assembly of claim 1, wherein the supercritical fluid is supercritical carbon dioxide.

Claim 15 (original): The pump assembly of claim 1, wherein the supercritical fluid is supercritical carbon dioxide admixed with an additive or solvent.

25          Claim 16 (currently amended): The pump assembly of claim 1, wherein a portion of the diverted supercritical fluid passes through, after leaving the pump assembly, is [[and]] then returned back to the pump inlet through an outer flow path, the outer flow path including a filter to clean particles generated by a motor assembly.

30          Claim 17 (original): The pump assembly of claim 1, wherein the motor is a variable speed motor.

Claim 18 (original): The pump assembly of claim 1, wherein the motor is an induction motor.

Claim 19 (original): The pump assembly of claim 1, wherein the non-magnetic material sleeve is welded to the pump shaft such that torque is transferred through the non-magnetic material sleeve.

5        Claim 20 (currently amended): A pump assembly for circulating a supercritical fluid, comprising: an impeller for pumping fluid between a pump inlet and a pump outlet; a rotating pump shaft coupled to the impeller, wherein the pump shaft is supported by non-lubricated bearings; a rotor of a DC motor potted in epoxy and encased in a stainless steel sleeve, the stainless steel sleeve being welded to the pump shaft such that torque is transferred through the stainless steel sleeve; and a stator sealed from the fluid via a  
10      [[PEEK<sup>TM</sup>]] Polyetheretherketone sleeve, the rotor and the stator defining an alternative flow path used to divert a portion of the supercritical fluid through the pump assembly and then back to the pump inlet through an outer flow path.

15      Claim 21 (original): The pump assembly of claim 20, further including an electrical controller suitable for operating the pump assembly, wherein the electrical controller comprises a commutation controller for sequentially energizing windings of the stator.

20      Claim 22 (original): The pump assembly of claim 20, wherein the pump is of centrifugal type.

Claim 23 (original): The pump assembly of claim 20, wherein the impeller has a diameter between 1 inch and 2 inches.

25      Claim 24 (original): The pump assembly of claim 20, wherein the rotor has a diameter between 1.5 inches and 2 inches.

Claim 25 (original): The pump assembly of claim 20, wherein the rotor has a maximum speed of 60,000 rpm.

30      Claim 26 (original): The pump assembly of claim 20, wherein an operating pressure of the pump assembly is in the range 1,500-3,000 psi.

Claim 27 (original): The pump assembly of claim 20, wherein the supercritical fluid operates in the range 40- 100 degrees Celsius.

5        Claim 28 (original): The pump assembly of claim 20, wherein the supercritical fluid is supercritical carbon dioxide.

Claim 29 (original): The pump assembly of claim 20, wherein the supercritical fluid is supercritical carbon dioxide admixed with an additive or solvent.

10      Claim 30 (currently amended): The pump assembly of claim 20, wherein the bearings can be made of silicon nitride balls combined with bearing races made of Cronidur® 30.

15      Claim 31 (currently amended): The pump assembly of claim 20, wherein the bearings are selected from the group consisting of ~~are one of following:~~ ceramic bearings, hybrid bearings, full complement bearings, foil journal bearings and[[or]] magnetic bearings.

Claim 32 (original): The pump assembly of claim 20, wherein the motor is a variable speed motor.

20      Claim 33 (original): The pump assembly of claim 20, wherein the motor is an induction motor.